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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,773	04/20/2004	Badredin Fatemizadeh	112518.00005	5237
26707	7590	07/01/2005	EXAMINER	
QUARLES & BRADY LLP RENAISSANCE ONE TWO NORTH CENTRAL AVENUE PHOENIX, AZ 85004-2391			ABRAHAM, FETSUM	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 07/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/828,773

Applicant(s)

FATEMIZADEH ET AL.

Examiner

Fetsum Abraham

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 4/6/25.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17, 19-32 is/are pending in the application.
- 4a) Of the above claim(s) 1-5 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-32 is/are allowed.
- 6) ☒ Claim(s) 6, 8-13 and 15-17, 19 is/are rejected.
- 7) ☒ Claim(s) 7 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

**The non-traversed election made on 4/6/05 has been acknowledged and the non-elected claims 1-5 withdrawn from consideration.**

**As a preliminary matter, there is no claim 18 in the application.**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6,8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumar et al (6,551,865).

As for claims 6,11, the prior art disclose a JFET structure in the front page comprising a gate (9) in a trench, an n-type epitaxial layer (2), a first P-region (3) under the gate and within the epitaxial layer and a second p-region of less concentration layer (3a) partially under the first region. Clearly, the second layer has another dimension level with the top surface of the first region but that feature does not eliminate the other dimension of the layer. Therefore, it would have been obvious to one skilled in the art to conclude layer (3a) being under layer (3) since it is partially under the same.

As for claim 8, the drain (1) of the JFET is formed below the epitaxial layer and the source (S1,S2) over a first portion of the epitaxial layer.

As for claims 9,10, the first conductivity type defining the conductivity type of the epitaxial layer is n-type and the first region and the second regions are made of the claimed type and impurity density.

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 12,13,15-17,19 are rejected under 35 U.S.C. 102(e) as being anticipated by Kumar et al (6,551,865).

As for claims 12,19 the prior art disclose a JFET structure in the front page comprising a gate (9) in a trench, an n-type epitaxial layer (2), a first P-region (3) under the gate and within the epitaxial layer and a second p-region of less concentration layer (3a) adjacent to the right end of the first region.

As for claim 13, there is a third region adjacent the left end of the first region with similar conductivity type but less in density compared to the first region.

As for claim 15, the drain (1) of the JFET is formed below the epitaxial layer and the source(S1,S2) over a first portion of the epitaxial layer.

As for claims 16,17, the first conductivity type defining the conductivity type of the epitaxial layer is n-type and the first region and the second regions are made of the claimed type and impurity density.

Claims 7,14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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The trench in said epitaxial layer where the gate is formed is not taught or rendered obvious by the prior art.

Claims 20-32 have been allowed.

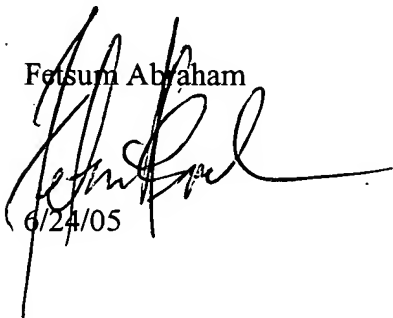
The JFET in claim 20 with all its elements and the half way extension in position of said second region in relation to the epitaxial layer and the gate region extension and motivation of claim 28 are not taught or rendered obvious by the prior arts.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Refer to PN: 6,841,812 and 6,774,417

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fetsum Abraham whose telephone number is: 571-272-1911. The examiner can normally be reached on 8:00 - 18:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915.

Fetsum Abraham

A handwritten signature in black ink, appearing to read 'Fetsum Abraham', is written over the printed name. The signature is stylized with a large initial 'F' and a long horizontal stroke at the end.

6/24/05